

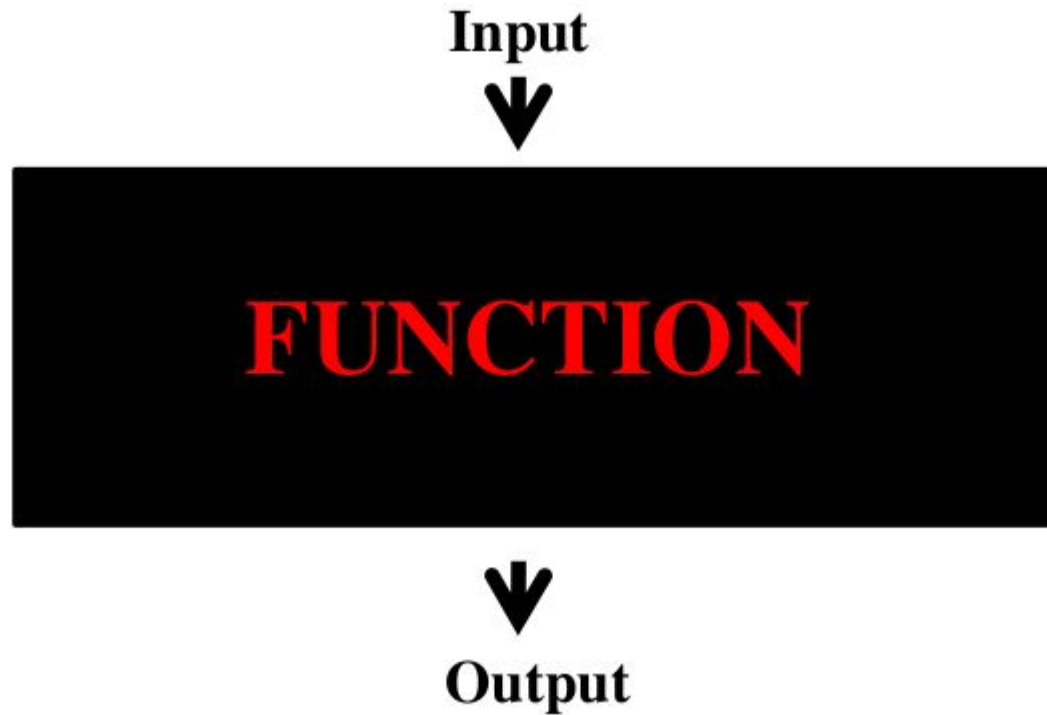
Prof. Dr. Boas Pucker (Plant Biotechnology and Bioinformatics)

# Availability of slides

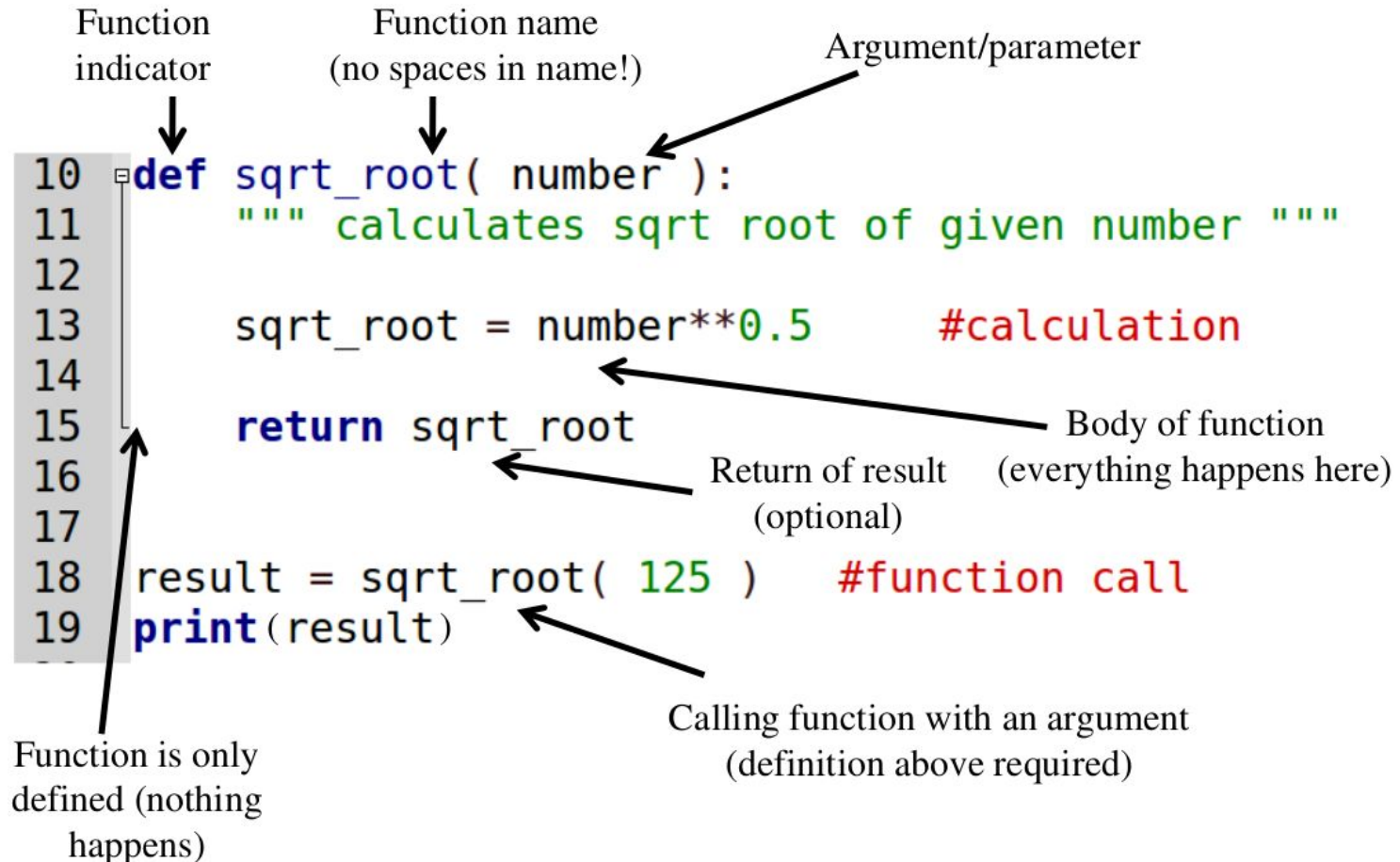
- All materials are freely available (CC BY) - after the lectures:
  - StudIP: 'Python for Life Scientists'
  - GitHub: <https://github.com/bpucker/teaching>
- Questions: Feel free to ask at any time
- Feedback, comments, or questions: [b.pucker\[a\]tu-bs.de](mailto:b.pucker[a]tu-bs.de)

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# What is a function?



# Elements of a function



# Advantages of functions

- Generate modules: write it once and apply it often (for different purposes)
- Structure: increase readability of your code
- Nested calculations are enabled by functions

```
1 def get_gc_content( seq ):  
2     """ calculates GC content of given sequence """  
3     return float( seq.count('G')+ seq.count('C') ) / len(seq)  
4  
5 gc_content = get_gc_content("ATGCGACTCAATGCA")  
6 print(gc_content)
```

# Important functions

- `str(<VARIABLE>)` #converts variable to string
- `int(<VARIABLE>)` #converts variable to integer
- `float(<VARIABLE>)` #converts variable to float
- `<STRING1>.count('<STRING2>')` #counts occurrences of string2 in string1
- `<LISTE>.count(<LISTELEMENT>)` #counts occurrences of element in list
- `len(<STRING/LIST>)` #calculate length of string/list
- Warning: Functions return error if invalid arguments (e.g. wrong variable type) are given!

# Exercises - Part2

- Primer: 'ATGCCATGCATTTCGACTACG'
- 2.1) Calculate length of primer and print it!
- 2.2) Get number of Gs and print it!
- 2.3) Write a function to analyze the nucleotide composition of a primer and print it!
- 2.4) Is it a suitable primer? Why (not)?

# Time for questions!